

W Y O M I N G

# CAREERS<sup>®</sup>



*Photo Courtesy  
of U.S. Army*



*Manufacturing*

Planning, managing and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance and manufacturing/process engineering.

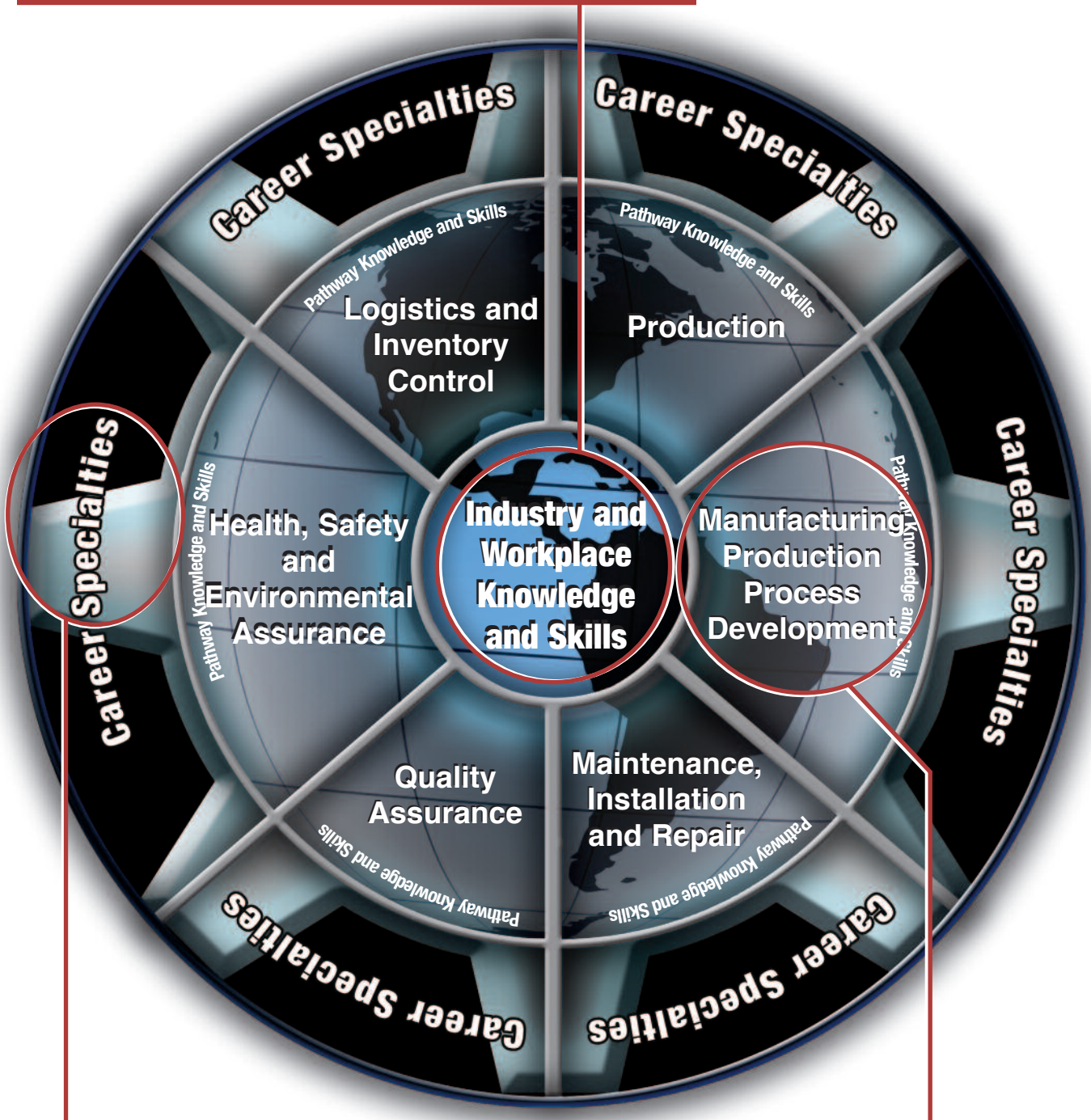
## Career Cluster Guide

2009-2010



# CAREER CLUSTER MODEL

Industry and workplace knowledge and skills are taught and reinforced in all pathways and at all levels.




Highly specific career specialty skills are taught at the postsecondary level by colleges, trade schools, apprenticeships or other training options.

High schools offer some or all pathways to students and teach pathway-specific knowledge and skills.

# PATHWAY

# SPECIFIC OCCUPATIONS

<b>Production</b>	<ul style="list-style-type: none"> <li>• Assemblers</li> <li>• Automated Manufacturing Technicians</li> <li>• Bookbinders</li> <li>• Calibration Technicians</li> <li>• Electrical Installers and Repairers</li> <li>• Electromechanical Equipment Assemblers</li> <li>• Extruding and Drawing Machine Setters/Set-Up Operators</li> <li>• Extrusion Machine Operators</li> <li>• Foundry Workers</li> </ul>	<ul style="list-style-type: none"> <li>• Grinding, Lapping, and Buffing Machine Operators</li> <li>• Hand Packers and Packagers</li> <li>• Hoist and Winch Operators</li> <li>• Instrument Makers</li> <li>• Large Printing Press Machine Setters and Set-Up Operators</li> <li>• Machine Operators</li> <li>• Managers, Supervisors</li> <li>• Medical Appliance Makers</li> <li>• Milling Machine Setters, Set-Up Operators</li> <li>• Millwrights</li> </ul>	<ul style="list-style-type: none"> <li>• Operators, Tenders, Cutters, Brazers, Soldering Machine Operations</li> <li>• Painters</li> <li>• Pattern and Model Makers</li> <li>• Precision Layout Workers</li> <li>• Precision Optical Goods Workers</li> <li>• Production Associates</li> <li>• Sheet Metal Workers</li> <li>• Solderers and Brazers</li> <li>• Tool and Die Makers</li> <li>• Welders</li> </ul>
<b>Manufacturing Production Process Development</b>	<ul style="list-style-type: none"> <li>• Design Engineers</li> <li>• Electrical and Electronic Technicians and Technologists</li> <li>• Electronics Engineers</li> <li>• Engineering and Related Technicians and Technologists</li> <li>• Engineering Technicians</li> </ul>	<ul style="list-style-type: none"> <li>• Industrial Engineers</li> <li>• Labor Relations Managers</li> <li>• Manufacturing Engineers</li> <li>• Manufacturing Technicians</li> <li>• Power Generating and Reactor Plant Operators</li> </ul>	<ul style="list-style-type: none"> <li>• Precision Inspectors, Testers, and Graders</li> <li>• Process Improvement Technicians</li> <li>• Production Managers</li> <li>• Purchasing Agents</li> <li>• Supervisors</li> </ul>
<b>Maintenance, Installation and Repair</b>	<ul style="list-style-type: none"> <li>• Biomedical Equipment Technicians</li> <li>• Boilermakers</li> <li>• Communication System Installers/Repairers</li> <li>• Computer Installers/Repairers</li> <li>• Computer Maintenance Technicians</li> <li>• Electrical Equipment Installers/Repairers</li> <li>• Facility Electricians</li> <li>• Industrial Electronic Installers/Repairers</li> </ul>	<ul style="list-style-type: none"> <li>• Industrial Facilities Managers</li> <li>• Industrial Machinery Mechanics</li> <li>• Industrial Maintenance Electricians</li> <li>• Industrial Maintenance Mechanics</li> <li>• Industrial Maintenance Technicians</li> <li>• Instrument Calibration Technicians and Repairers</li> <li>• Instrument Control Technicians</li> </ul>	<ul style="list-style-type: none"> <li>• Job/Fixture Designers</li> <li>• Laser Systems Technicians</li> <li>• Maintenance Repairers</li> <li>• Major Appliance Repairers</li> <li>• Meter Installers/Repairers</li> <li>• Millwrights</li> <li>• Plumbers, Pipe Fitters and Steam Fitters</li> <li>• Security System Installers/Repairers</li> </ul>
<b>Quality Assurance</b>	<ul style="list-style-type: none"> <li>• Calibration Technicians</li> <li>• Inspectors</li> <li>• Lab Technicians</li> </ul>	<ul style="list-style-type: none"> <li>• Process Control Technicians</li> <li>• Quality Control Technicians</li> </ul>	<ul style="list-style-type: none"> <li>• Quality Engineers</li> <li>• SPC Coordinators</li> </ul>
<b>Logistics and Inventory Control</b>	<ul style="list-style-type: none"> <li>• Communications, Transportation and Utilities Managers</li> <li>• Dispatchers</li> <li>• Freight, Stock, and Material Movers</li> </ul>	<ul style="list-style-type: none"> <li>• Industrial Truck and Tractor Operators</li> <li>• Logistical Engineers</li> <li>• Logisticians</li> <li>• Material Associates</li> <li>• Material Handlers</li> <li>• Material Movers</li> </ul>	<ul style="list-style-type: none"> <li>• Process Improvement Technicians</li> <li>• Quality Control Technicians</li> <li>• Traffic Managers</li> <li>• Traffic, Shipping, and Receiving Clerks</li> </ul>
<b>Health, Safety and Environmental Assurance</b>	<ul style="list-style-type: none"> <li>• Environmental Engineers</li> <li>• Environmental Specialists</li> <li>• Health and Safety Representatives</li> <li>• Safety Coordinators</li> <li>• Safety Engineers</li> <li>• Safety Team Leaders</li> <li>• Safety Technicians</li> </ul>		



# Wyoming's Highest-Paying, Fastest-Growing Jobs

Title	Basic Description O*NET/SOC Description (may be truncated)	Anticipated Total 2014 Employment
Source: See footnote #1	Source: See footnote #1	Source: See footnote #1
Heating, air conditioning, and refrigeration mechanics and installers	Install or repair heating, central air conditioning, or refrigeration systems, including oil burners, hot-air furnaces, and heating stoves.	405
Helpers – production workers	Help production workers by performing duties of lesser skill. Duties include supplying or holding materials or tools and cleaning work area and equipment.	975
Industrial production managers	Plan, direct, or coordinate the work activities and resources necessary for manufacturing products in accordance with cost, quality, and quantity specifications.	240
Inspectors, testers, sorters, samplers, and weighers	Inspect, test, sort, sample, or weigh nonagricultural raw materials or processed, machined, fabricated, or assembled parts or products for defects, wear, and deviations from specifications.	695
Machinists	Set up and operate a variety of machine tools to produce precision parts and instruments.	706
Maintenance and repair workers, general	Perform work involving the skills of two or more maintenance or craft occupations to keep machines, mechanical equipment, or the structure of an establishment in repair. Duties may involve pipe fitting; boiler making; insulating; welding; machining; carpentry; repairing electrical or mechanical equipment; installing, aligning, and balancing new equipment; and repairing buildings, floors, or stairs.	3,423
Mobile heavy equipment mechanics, except engines	Diagnose, adjust, repair, or overhaul mobile mechanical, hydraulic, and pneumatic equipment, such as cranes, bulldozers, graders, and conveyors, used in construction, logging, and surface mining.	1,636
Structural metal fabricators and fitters	Fabricate, lay out, position, align, and fit parts of structural metal products.	290
Team assemblers	Work as part of a team having responsibility for assembling an entire product or component of a product.	569
Welders, cutters, solderers, and brazers	Use hand-welding, flame-cutting, hand soldering, or brazing equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.	1,979

1. Source: [doe.state.wy.us/lmi](http://doe.state.wy.us/lmi)
2. Source: [www.careerinfonet.org](http://www.careerinfonet.org)

For additional information  
and resources, go to:  
[http://www.wyomingworkforce.org/resources/  
links\\_career.aspx](http://www.wyomingworkforce.org/resources/links_career.aspx)

# Manufacturing

Wyoming Number of New Jobs, Projected 2004-2014	Wyoming Estimated Hourly Average Wage	Wyoming Estimated Yearly Wage	Most Common Education/ Training	Suggested Programs of Study	Is at least one of these programs available in Wyoming?
Source: See footnote #1	Source: See footnote #1	Source: See footnote #1	Source: See footnote #2	Source: See footnote #2	
131	\$17.98	\$37,393	Long-term on-the-job training	<ul style="list-style-type: none"> <li>• Heating, Air Conditioning and Refrigeration Technology (ACH/ACR/ACHR/HRAC/HVAC/AC Technology)</li> <li>• Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology (HAC, HACR, HVAC, HVACR)</li> <li>• Solar Energy Technology</li> <li>• Apprenticeship Programs</li> </ul>	Yes
282	\$13.42	\$29,976	Short-term on-the-job training	No information about "Instructional Programs" for this occupation is available.	Yes
50	\$45.53	\$88,457	Work experience in a related occupation	<ul style="list-style-type: none"> <li>• Business Administration and Management</li> <li>• Business/Commerce Operations Management and Supervision</li> </ul>	Yes
240	\$20.20	\$33,484	Moderate-term on-the-job training	<ul style="list-style-type: none"> <li>• Quality Control Technology</li> </ul>	Yes
254	\$19.34	\$40,220	Long-term on-the-job training	<ul style="list-style-type: none"> <li>• Machine Shop Technology</li> <li>• Machine Tool Technology</li> </ul>	Yes
801	\$17.78	\$36,986	Moderate-term on-the-job training	<ul style="list-style-type: none"> <li>• Building/Construction Site Management</li> </ul>	Yes
488	\$21.84	\$45,427	Long-term on-the-job training	<ul style="list-style-type: none"> <li>• Agricultural Mechanics and Equipment/Machine Technology</li> <li>• Heavy Equipment Maintenance Technology</li> </ul>	Yes
96	\$17.38	\$36,139	Moderate-term on-the-job training	<ul style="list-style-type: none"> <li>• Machine Shop Technology</li> </ul>	Yes
126	\$12.33	\$25,663	Moderate-term on-the-job training	No information about "Instructional Programs" for this occupation is available.	Yes
619	\$19.82	\$41,223	Postsecondary vocational award	<ul style="list-style-type: none"> <li>• Welding Technology</li> </ul>	Yes

## Wyoming Licensed Occupations – Manufacturing

Occupational Title		Licensing Agency	Occupational Title		Licensing Agency
	Engineers	State Board of Registration for Professional Engineers and Land Surveyors 2424 Pioneer Avenue, Suite 400 Cheyenne, Wyoming 82002		Truck Drivers	Driver Services, Customer Service P.O. Box 1708 5300 Bishop Blvd. Cheyenne, Wyoming 82003-1708
	Electricians	Department of Fire Prevention & Electrical Safety Herschler Building, 1 West Cheyenne, Wyoming 82002		Aircraft Mechanics	Wyoming Department of Transportation P.O. Box 1708 Cheyenne, Wyoming 82003-1708
	Mine Foremen and Examiners	Wyoming Mining Council P.O. Box 1094 Rock Springs, Wyoming 82902		Mine Shotfirers	State Mine Inspector P.O. Box 1094 Rock Springs, Wyoming 82902

# PROGRAMS OF STUDY

## WYOMING COMMUNITY COLLEGES

### MANUFACTURING

Casper College

Central Wyoming College

Eastern Wyoming College

Laramie County  
Community College

Northwest College

Northern Wyoming  
Community College District

Western Wyoming  
Community College

## MAJORS

AS - Associate of Sciences  
AA - Associate of Arts  
AAS - Associate of Applied Sciences  
C - Certificate

A+ Certificate Program

Auto Body Repair

Automotive Technology

Business Administration

Business Management

Compression Technology

Computer Security

Electrical and Instrumentation Technology

Electrical Apprenticeship

Electrical Mine Maintenance

Electronics/Instrumentation/Control Technology

Engineering

Engineering Science

Engineering Technology

Engineering Technology – Drafting and Design, General

Fundamentals of Integrated Systems Technology

Industrial Electricity/Electronics

Industrial Maintenance – Mechanics/Hydraulics

Industrial Maintenance Technician

Industrial Maintenance – Mechanics/Welding Technician

Machine Tool Technology

Management Information Systems

Management Information Systems (Computer Science)

Manufacturing Specialist

Manufacturing Technology

Manufacturing – Organization and Workplace Skills

C

AAS, C

AAS, C

AS

AA

AAS

AAS

AAS, C

C

AAS

C

C

C

AS

AS

AA, AS

AS

AS

AAS

AAS, C

C

AAS

C

AAS

C

AAS, C

C

AAS, C

AS

C

AAS, C

C

# PROGRAMS OF STUDY

## WYOMING COMMUNITY COLLEGES

### MANUFACTURING

Casper College

Central Wyoming College

Eastern Wyoming College

Laramie County  
Community College

Northwest College

Northern Wyoming  
Community College District

Western Wyoming  
Community College

## MAJORS

AS - Associate of Sciences  
AA - Associate of Arts  
AAS - Associate of Applied Sciences  
C - Certificate

Manufacturing – Production Requirements  
Automated Manufacturing

Manufacturing Representative

MIG Welding

Mine Maintenance Technician

Oil and Gas Production Technician

Plant Operations

Power Plant Maintenance Mechanics

Prepress

Prepress Production

Printing Management

Printing Production

Programmer/Analyst

Robotic Technology

Robotics Technology Skills

Sheet Metal Apprentice

Surface Maintenance Mechanics

Technical Studies

TIG Welding

Welding

Welding and Joining Technology

Welding Technology – Fabrication Shop Option

Welding Technology – Industrial Plant Option

Welding Technology – Mine Maintenance Option

Welding Technology

Wind Power Technician/Wind Power Technology

C

C

C

AAS, C

AAS, C

AAS, C

C

C

AS

AAS

AAS

AAS, C

AAS, C

C

AAS

C

AAS

C

AAS, C

AAS, C

AAS, C

AAS, C

AAS, C

AAS, C

AAS, C

AAS, C

AAS, AS, C



# UNIVERSITY OF WYOMING

## COLLEGE OF ARTS AND SCIENCES

Bachelor's Master's Doctorate

MAJORS

Chemistry

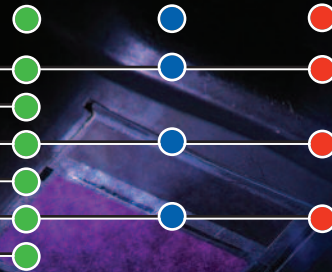
Chemistry – Professional

Math

Math/Science

Physics

Physics Plus



## COLLEGE OF EDUCATION

MAJOR Industrial Technology Education  
(UW Casper only)



## COLLEGE OF ENGINEERING

MAJORS

Chemical Engineering

Civil Engineering

Computer Engineering

Computer Science

Computer Science – Professional

Electrical Engineering

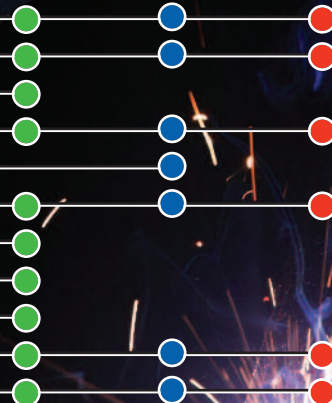
Electrical Engineering – Bioengineering

Electrical Engineering – Computer Engineering

Management Information Systems Engineering

Mechanical Engineering

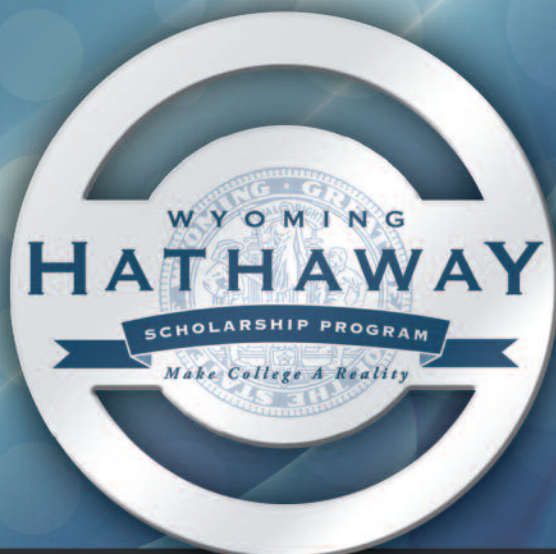
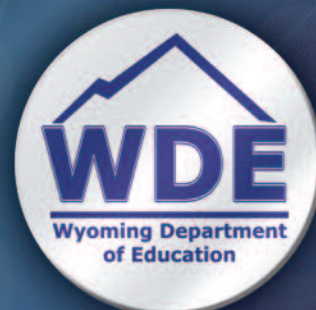
Petroleum Engineering



**Degree:** An award conferred by a college or university signifying that the recipient has satisfactorily completed a defined academic or vocational-technical program of study: Associate of Arts, Associate of Science, Associate of Applied Science, Bachelor of Arts, or Bachelor of Science.

**Certificate:** An official document issued to a student by a college or university attesting to the training, aptitude and/or qualification gained from the satisfactory completion of a defined program of study. Credit hours vary from 0 to 60 credit hours and are awarded for attendance or specific skills gained. (Attendance requirements vary from one hour to two years of study, depending upon program requirements.)





### Notice

The Wyoming Career Cluster Guides and accompanying Planning Guide are publications of the Wyoming Department of Education. Information contained herein is provided as a public service. While every attempt has been made to provide accurate information, there is no guarantee of the completeness or accuracy of the information provided. There is no promise or warranty that the agencies involved will continue to provide or update information. This service may be suspended or discontinued at any time. The user assumes the responsibility of verifying any information used or relied upon.

Future versions of the Wyoming Career Cluster Guides and accompanying Planning Guide may be modified in terms of content and format based upon user input. Please direct all suggestions and inquiries in writing to:

Career Cluster Coordinator  
**Wyoming Department of Education**  
2300 Capitol Avenue  
Hathaway Building, 2nd Floor  
Cheyenne, WY 82002-0050



The Wyoming Department of Education does not discriminate on the basis of race, color, national origin, sex, age, or disability in admission or access to, or treatment of employment in its programs or activities. Inquiries concerning Title VI, Title IX, Section 504, and ADA may be referred to Wyoming Department of Education, Office for Civil Rights Coordinator, 2300 Capitol Ave., Cheyenne, WY 82002-0050 or 307-777-7673, or the Office of Civil Rights, Region VIII, U. S. Department of Education, Federal Building, Suite 310, 1244 Speer Boulevard, Denver, CO 80204-3582, or 303-844-5695 or TDD 303-844-3417. This information will be provided in an alternative format upon request.



**States' Career Clusters Initiative 2006**  
[www.careerclusters.org](http://www.careerclusters.org)